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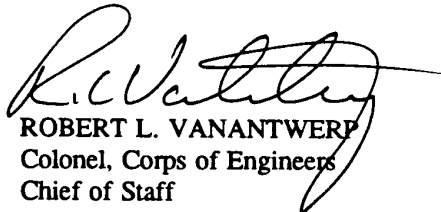
Manual
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Engineering and Design
DEFORMATION MONITORING AND CONTROL SURVEYING

- 1. Purpose.** This manual provides technical specifications and procedural guidance for control, geodetic and precise structural deformation surveying. It is intended for use by engineering, topographic, and construction surveyors performing control or deformation surveys for civil works, military construction, and environmental restoration projects. Procedural and quality control standards are defined to establish uniformity in control survey performance and contract administration.
- 2. Applicability.** This manual applies to HQUSACE elements, major subordinate commands, districts, laboratories, and field operating activities having responsibility for the planning, engineering and design, operations, maintenance, construction, and related real estate and regulatory functions of civil works, military construction, and environmental restoration projects. It applies to control surveys performed by both hired-labor forces and contracted survey forces. It is also applicable to surveys performed or procured by local interest groups under various cooperative or cost-sharing agreements.
- 3. General.** Control survey techniques can be used to formulate accurate, three-dimensional point positions. Positions obtained through control surveying may be used to provide the primary reference control monument locations for engineering and construction projects, from which detailed site plan topographic mapping, boundary demarcation, and construction alignment work can be performed. Positions obtained through control surveying have application in the continuous positioning of marine construction vessels, such as dredges and survey boats. Also, various control survey techniques can be used to effectively and efficiently monitor and evaluate large structures, such as locks and dams.
- 4. Accuracy.** The accuracy of USACE surveying measurements should be consistent with the purpose of the survey. When evaluating the technique to be used and accuracies desired, the surveyor must evaluate the limits of the errors of the equipment involved, the procedures to be followed, and effects of error propagation. These evaluations should be firmly based on past experience or written guidance. It is key to remember in this evaluation that the best survey is the one that provides the data at the required accuracy levels without wasting manpower, time, and money.

FOR THE COMMANDER:


ROBERT L. VANANTWERP
Colonel, Corps of Engineers
Chief of Staff

ETL 1110-1-147 is superseded and incorporated in this manual.